

AMENDMENTS TO THE CLAIMS

1. (currently amended) A ~~computer-implemented~~ sort processing method for comparing magnitudes of pieces of input data with each other and rearranging said pieces of input data in accordance with results of said comparison, able to be implemented in a data processing system, said method comprising the step of:

repeating basic processes in parallel, each of which is comprised of a combination of [a] comparison processing and [a] selection processing, said comparison processing being used to compare magnitudes of pieces of input data with each other by using data comparators, and said selection processing being used to select pieces of input data by using data selectors;

wherein said parallel basic processes include basic blocks, each of which includes a first stage including basic cells and a second stage including basic cells, and wherein the number of basic cells in the first stage of the basic block is greater than the number of basic cells in the second stage of the basic block, and the total number of said basic processes is equal to the number of combinations of pieces of input data to be compared.

2. (previously presented) A method according to claim 1 wherein the size of sort processing is increased by raising the number of basic processes to keep up with an increase in the number of pieces of input data.

3. (previously presented) A method according to claim 1 whereby a clock signal is used for synchronizing said pieces of input data.

4. (currently amended) A ~~computer-implemented~~ sort processing apparatus for comparing magnitudes of pieces of input data with each other and rearranging said pieces of input data in accordance with results of said comparison, able to be implemented in a data processing system, said apparatus comprising:

means for comparing magnitudes of pieces of input data with each other and for outputting a select signal, comprising basic blocks which comprise two-stage parallel basic cells, each of which comprises a data comparator, wherein the two-stages include a first stage and a second stage, and means for rearranging said compared pieces of input data in a magnitude order on the basis of said select signal, comprising a data selector;

wherein the number of said parallel basic cells in said first stage of said basic block is larger by one than the number of said parallel basic cells in said second stage of said basic block, and the total number of said basic cells is equal to the number of combinations of pieces of input data to be compared.

5. (previously presented) An apparatus according to claim 4 wherein said data selector is provided with a pair of data selectors used for receiving a pair of pieces of input data; and

said data selector is controlled on the basis of said select signal so as to allow output terminals of said data selectors to output said pair of pieces of input data in a predetermined magnitude order.

6. (previously presented) An apparatus according to claim 4 wherein the size of sort processing is increased by raising the number of basic cells to keep up with an increase in the number of pieces of input data.

7. (previously presented) An apparatus according to claim 4 wherein latches are used between said basic cells in order to synchronize said pieces of input data which have been sorted.

8. (previously presented) An apparatus according to claim 4 wherein each of said basic cells sorts particular ones of said pieces of input data by controlling said first data selector thereof for said particular pieces of input data by using said select signal.

9. (previously presented) An apparatus according to claim 4 wherein, if the number of said pieces of input data is odd, an invalid piece of input data is added to said valid pieces of input data to make the total number of said pieces of input data even, and said invalid piece of input data is set at a value greater than a maximum among said valid pieces of input data or a value smaller than a minimum among said valid pieces of input data.

10. (previously presented) An apparatus according to claim 4 wherein said basic cells are laid out over a rectangular area.

11. (previously presented) An apparatus for comparing magnitudes of pieces of compound data including key data and relevant data related to said key data with each other and rearranging said pieces of compound data in accordance with results of comparison, able to be implemented in a data processing system, said apparatus comprising:

basic blocks which consist of two-stage parallel basic cells, each of which includes a data comparator for comparing magnitudes of pieces of key data with each other and for outputting a select signal, and a data selector for rearranging said relevant data of said compound data in a magnitude order of said key data on the basis of said select signal;

wherein the number of said parallel basic cells in said first stage of said basic block is larger by one than the number of said parallel basic cells in said second stage of said basic block, and the total number of said basic cells is equal to the number of combinations of pieces of compound data to be compared.

12. (previously presented) An apparatus according to claim 11 wherein said data selector is provided with two pairs of data selectors for receiving a pair of pieces of said key data so as to perform selection of said key data and for receiving a pair of said relevant data so as to perform selection of said relevant data; and

each of said selectors is controlled on the basis of said selection signal.

13. (previously presented) An apparatus according to claim 11 wherein the size of sort processing is increased by raising the number of basic cells to keep up with an increase in the number of pieces of compound data.

14. (previously presented) An apparatus according to claim 11 wherein latches are used between said basic cells in order to synchronize said pieces of compound data which have been sorted.

15. (previously presented) An apparatus according to claim 11 wherein each of said basic cells sorts particular ones of said pieces of compound data by controlling said data selector thereof for said particular pieces of compound data by using said select signal.

16. (previously presented) An apparatus according to claim 11 wherein, if the number of said pieces of compound data is odd, an invalid piece of compound data is added to said valid pieces of compound data to make the total number of said pieces of compound data even, and said invalid piece of compound data is set at a value greater than a maximum among said valid pieces of compound data or a value smaller than a minimum among said valid pieces of compound data.

17. (previously presented) An apparatus according to claim 11 wherein said basic cells are laid out over a rectangular area.

18. (previously presented) An apparatus according to claim 4, wherein said basic cells comprise first basic cells, said data comparator comprises a first data comparator, said data selection comprises a first data selector, said apparatus is further able to compare magnitudes of pieces of compound data including key data and relevant data related to said key data with each other and to rearrange said pieces of compound data in accordance with results of said comparison, in a data processing system, and said apparatus further comprises second basic cells, each of which includes a second data comparator for comparing magnitudes of pieces of key data with each other and for outputting a second select signal, and a second data selector for rearranging said relevant data of said compound data in a magnitude order of said key data on the basis of said second select signal, wherein the total number of said second basic cells is equal to the number of combinations of pieces of compound data to be compared.